



MOLDED GEARS

Bevels & Mitters

Spurs

Helicals

Worms

Combinations



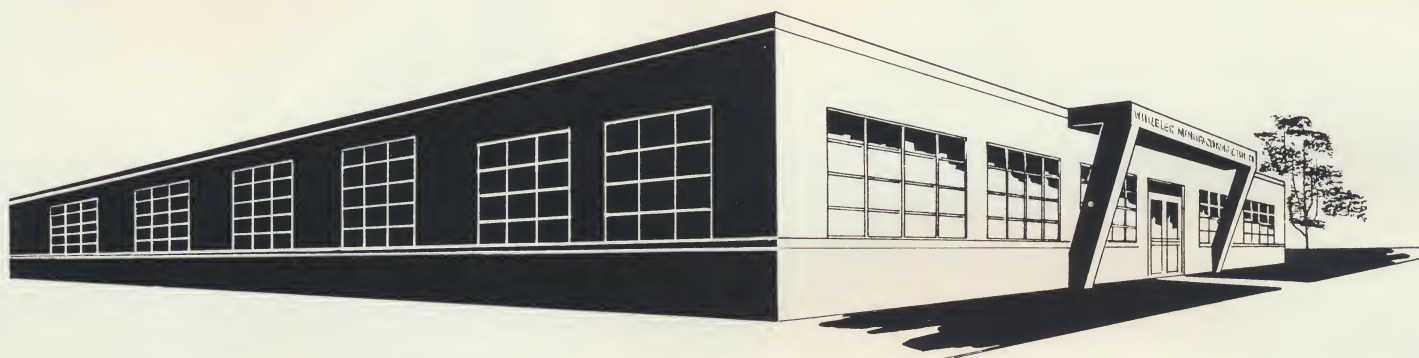
Manufacturing & Tool Company
7355 W. Wilson Avenue • Chicago, Illinois 60656 • (312) 867-7971

WINZELER MANUFACTURING & TOOL COMPANY . . .

. . . is proud to be known as one of the leading manufacturers of uniform, accurate Molded Plastic and Stamped Gears, as well as producers of truly fine dies, jigs, fixtures and small stampings of all types. We hope that you will have an opportunity to take advantage of our more than 20 years of success in the specialized field of gear tooling and production, and our more than 40 years experience as builders of fine tools.

The information given in this brochure should answer most of your initial questions concerning Winzeler Molded Plastic Gears. We list specifications of stock molds (a steadily growing list) from which gears and related parts are speedily and efficiently made to your order.

*** WINZELER has earned a national reputation for the manufacture of Stamped Gearing of many types, made to a very high degree of accuracy. Ask for catalog of stocked dies.**



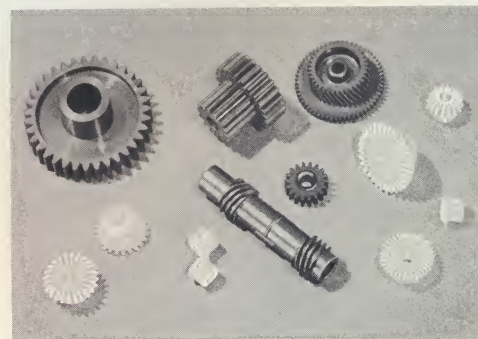
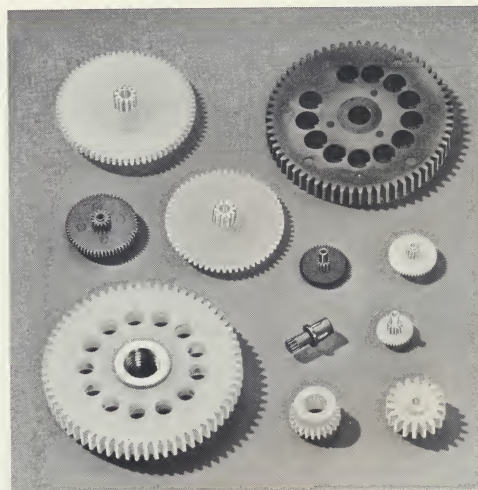
MOLDED GEARS . . .

WINZELER supplies Molded Plastic Gears from molds tooled with maximum accuracy on the most modern electrical discharge equipment, and produced in a specialized plant set up just for this purpose.

With these thoroughly up-to-date facilities supervised by expert molding specialists, and backed up by Winzeler's decades of experience in the Gear field, we are able to tool to close specifications and produce fine uniformity over runs of every size. Our special equipment gives us close control over atmospheric conditions.

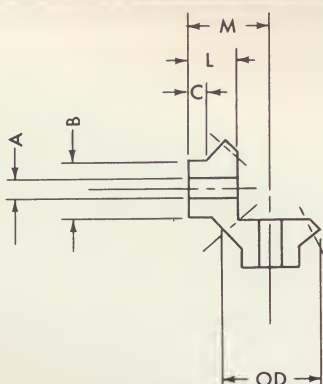
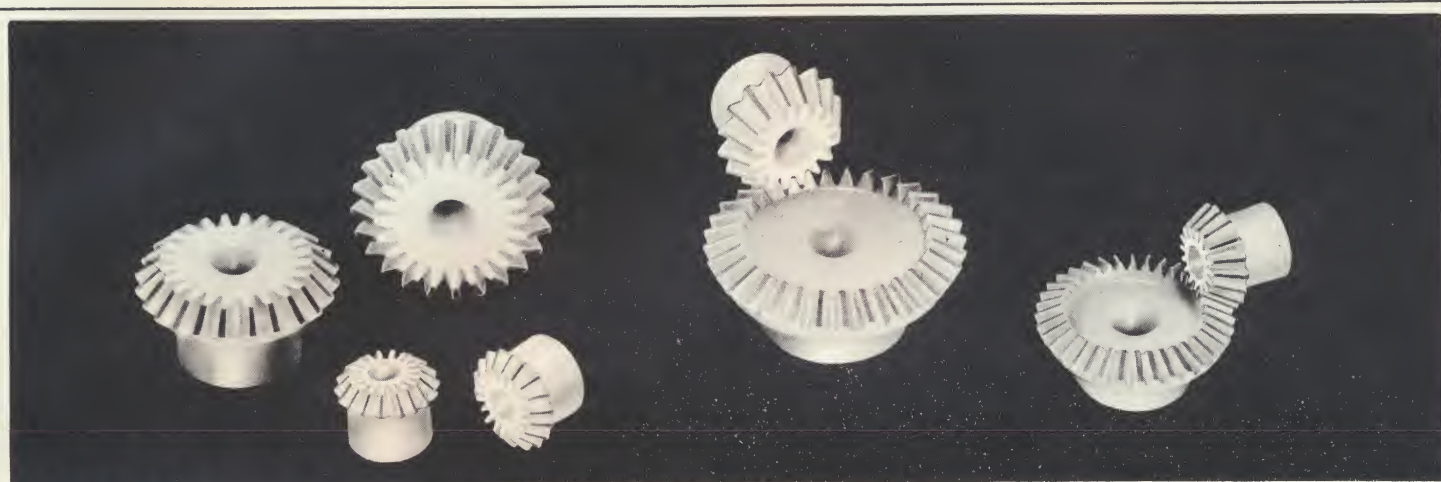
We can produce a wide variety of standard and special Gears (including Spurs and Pinions, Combinations, Helicals, Bevels, Worms), with suprisingly modest tooling expense. We are already tooled for a growing series of standard types and sizes; and with our specialized equipment, we can mold filled materials.

The advantages of Molded Plastic Gears — quiet running, normally no need for Gear lubrication, perfect mating with metal Gears, long service life — often recommend their consideration for new projects or redesign. Let us help you work out possibilities for greater efficiency, lower costs.

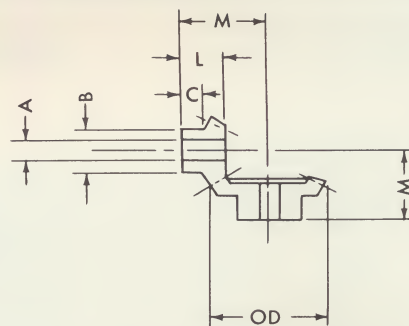


BEVEL & MITER GEARS

MADE TO ORDER FROM STOCK TOOLING



MITER SET



BEVEL SET

WINZELER GEAR SPEC. NO.	TYPE	PITCH	P.A.	PITCH DIA.	O.D.	"A" DIM.	"B" DIM.	"C" DIM.	"L" DIM.	"M" DIM.
MD-018-901	BEVEL	24	20°	.750	.860	.187	9/16	1/4	17/32	1-1/16
MD-036-901	BEVEL	24	20°	1.500	1.530	.250	7/8	5/16	29/64	25/32
MF-016-901	BEVEL	32	20°	.500	.556	.187	3/8	3/16	3/8	23/32
MF-032-901	BEVEL	32	20°	1.000	1.028	.187	9/16	1/4	7/16	19/32
MF-016-911*	BEVEL	32	20°	.500	.587	.188	7/16	7/32	15/32	1-1/4
MF-064-911*	BEVEL	32	20°	2.000	2.009	.252	1.00	5/16	1/2	11/16
ML-018-901	BEVEL	48	20°	.375	.412	.125	9/32	3/16	21/64	19/32
ML-036-901	BEVEL	48	20°	.750	.765	.187	7/16	3/16	5/16	7/16
MD-024-701	MITER	24	20°	1.000	1.060	.250	5/8	9/32	9/16	29/32
MF-024-701	MITER	32	20°	.750	.800	.187	1/2	3/16	13/32	11/16
ML-018-701	MITER	48	20°	.375	.404	.125	5/16	3/16	9/32	13/32

NOTE: These may also be ordered with one or two set screw holes.

STANDARD MATERIAL: NYLON
(also available in Nylatron G. S.)

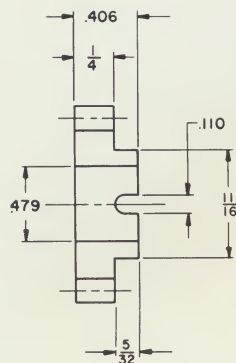
*Material is Delrin.

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING

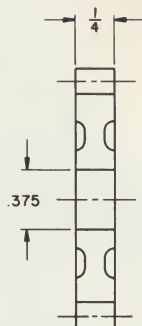
LU-013-201



SPUR GEAR
13 TEETH
12 DIAMETRAL
PITCH
14.5° P.A.
1.083 PITCH DIA.
1.250 OUTSIDE DIA.

SPUR GEAR & HUB:
NYLON 610-NATURAL

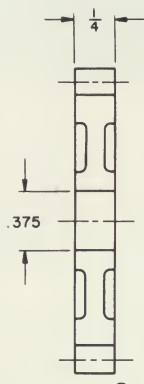
LU-018-101



SPUR GEAR
18 TEETH
12 DIAMETRAL
PITCH
14.5° P.A.
1.500 PITCH DIA.
1.660 OUTSIDE DIA.

SPUR GEAR - PLAIN:
NYLON 610-NATURAL

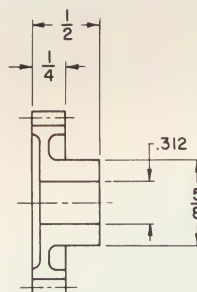
LU-021-101



SPUR GEAR
21 TEETH
12 DIAMETRAL
PITCH
14.5° P.A.
1.750 PITCH DIA.
1.910 OUTSIDE DIA.

SPUR GEAR - PLAIN:
NYLON 610-NATURAL

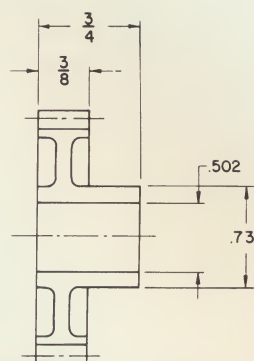
MB-025-201



SPUR GEAR
25 TEETH
20 DIAMETRAL PITCH
20° P.A.
1.250 PITCH DIA.
1.350 OUTSIDE DIA.
NOTE: THIN TOOTH
TO PROVIDE
ADDITIONAL
BACKLASH

GEAR AND HUB: NYLON

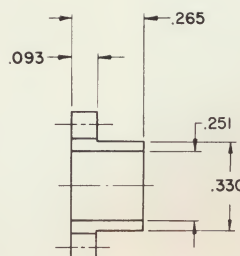
MB-035-201



SPUR GEAR
35 TEETH
20 DIAMETRAL
PITCH
20° P.A.
1.750 PITCH DIA.
1.850 OUTSIDE DIA.

GEAR & HUB:
NYLATRON G.S.

MC-011-201



SPUR GEAR
11 TEETH
24 DIAMETRAL
PITCH
14.5° P.A.
0.458 PITCH DIA.
0.542 OUTSIDE DIA.

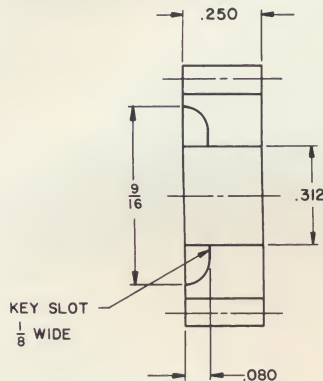
SPUR PINION:
NYLON 101 - NATURAL

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING

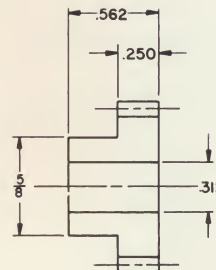
MD-018-101



SPUR GEAR
18 TEETH
24 DIAMETRAL
PITCH
20° P.A.
0.750 PITCH DIA.
0.833 OUTSIDE DIA.

SPUR GEAR:
DELIN-BLACK

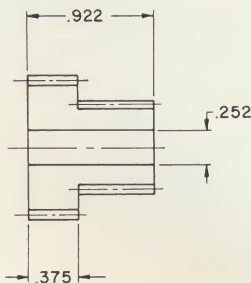
MD-024-201



SPUR GEAR
24 TEETH
24 DIAMETRAL
PITCH
20° P.A.
1.000 PITCH DIA.
1.083 OUTSIDE DIA.

SPUR GEAR & HUB:
DELIN - BLACK

MD-024-301

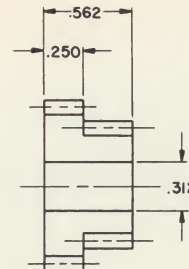


SPUR GEAR
24 TEETH
24 DIAMETRAL PITCH
20° P.A.
1.000 PITCH DIA.
1.082 OUTSIDE DIA.

SPUR PINION
14 TEETH
24 DIAMETRAL PITCH
20° P.A.
0.583 PITCH DIA.
0.667 OUTSIDE DIA.

GEAR & PINION: NYLATRON

MD-024-302

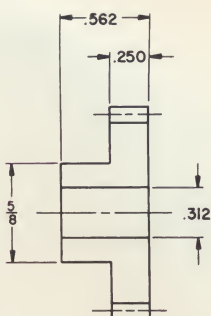


SPUR GEAR
24 TEETH
24 DIAMETRAL PITCH
20° P.A.
1.000 PITCH DIA.
1.083 OUTSIDE DIA.

SPUR PINION
18 TEETH
24 DIAMETRAL PITCH
20° P.A.
0.750 PITCH DIA.
0.833 OUTSIDE DIA.

GEAR & PINION CLUSTER:
DELIN - BLACK

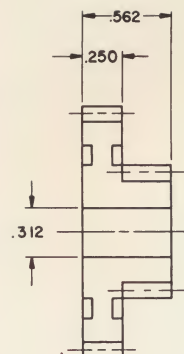
MD-030-202



SPUR GEAR
30 TEETH
24 DIAMETRAL
PITCH
20° P.A.
1.250 PITCH DIA.
1.333 OUTSIDE DIA.

SPUR GEAR & HUB:
DELIN - BLACK

MD-036-301



SPUR GEAR
36 TEETH
24 DIAMETRAL PITCH
20° P.A.
1.500 PITCH DIA.
1.583 OUTSIDE DIA.

SPUR PINION
18 TEETH
24 DIAMETRAL PITCH
20° P.A.
0.750 PITCH DIA.
0.833 OUTSIDE DIA.

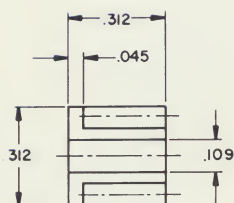
GEAR & PINION CLUSTER:
DELIN - BLACK

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING

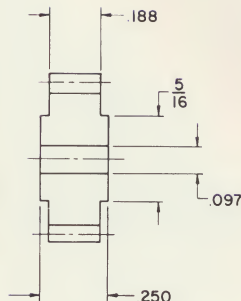
ME-008-101



SPUR PINION
8 TEETH
32 DIAMETRAL
PITCH
14.5° P.A.
0.250 PITCH DIA.
0.312 OUTSIDE DIA.

SPUR PINION GEAR:
ZYTEL 101 - NATURAL

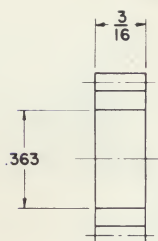
ME-018-101



SPUR PINION
18 TEETH
32 DIAMETRAL
PITCH
14.5° P.A.
0.562 PITCH DIA.
0.625 OUTSIDE DIA.

SPUR PINION GEAR:
NYLON 101 - NATURAL

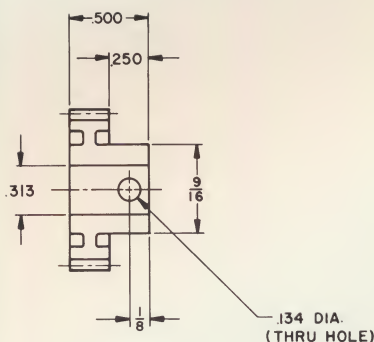
ME-018-102



SPUR GEAR
18 TEETH
32 DIAMETRAL
PITCH
14.5° P.A.
0.562 PITCH DIA.
0.625 OUTSIDE DIA.

SPUR PINION:
NYLON 101 - NATURAL

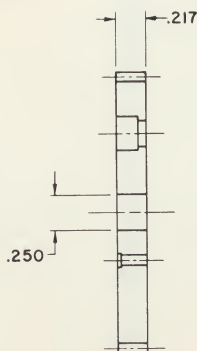
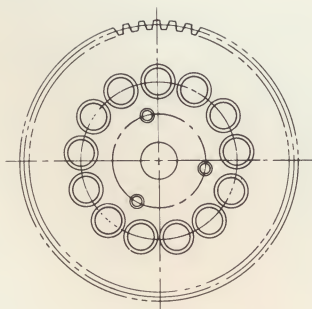
ME-031-201



SPUR GEAR
31 TEETH
32 DIAMETRAL
PITCH
14.5° P.A.
0.969 PITCH DIA.
1.025 OUTSIDE DIA.

SPUR GEAR & HUB:
DELRIN - NATURAL

ME-064-101



SPUR GEAR
64 TEETH
32 DIAMETRAL
PITCH
14.5° P.A.
2.000 PITCH DIA.
2.062 OUTSIDE DIA.

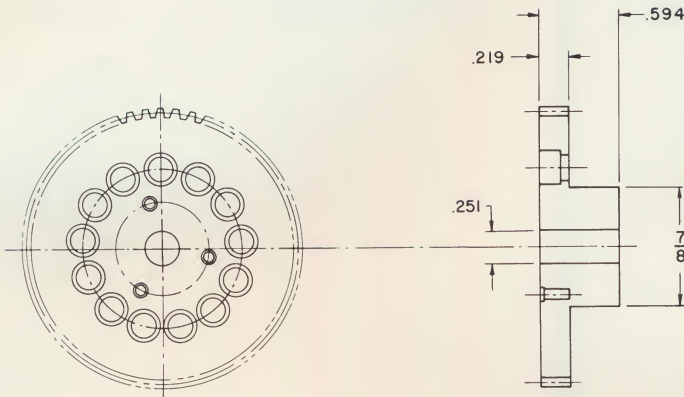
SPUR GEAR:
NYLON 101 - NATURAL

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING

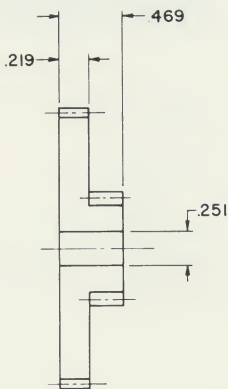
ME-064-202



SPUR GEAR

64 TEETH
32 DIAMETRAL PITCH
PITCH
14.5° P.A.
2.000 PITCH DIA.
2.062 OUTSIDE DIA.

SPUR GEAR & HUB:
NYLON 101 - NATURAL



ME-064-301

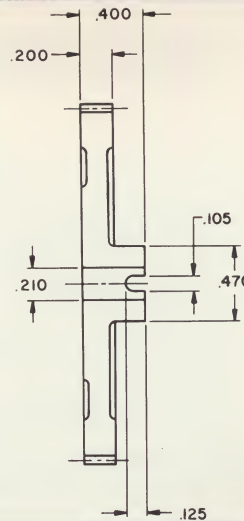
SPUR GEAR

64 TEETH
32 DIAMETRAL PITCH
14.5° P.A.
2.000 PITCH DIA.
2.062 OUTSIDE DIA.

SPUR PINION

18 TEETH
24 DIAMETRAL PITCH
14.5° P.A.
0.750 PITCH DIA.
0.832 OUTSIDE DIA.

SPUR GEAR & PINION: NYLON 101 - NATURAL

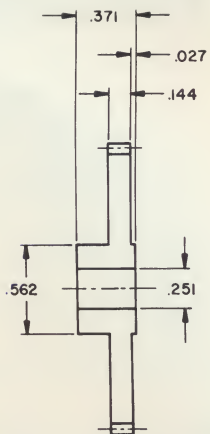


MF-072-201

SPUR GEAR

72 TEETH
32 DIAMETRAL
PITCH
20° P.A.
2.246 PITCH DIA.
2.301 OUTSIDE DIA.

SPUR GEAR & HUB:
NYLATRON G.S.

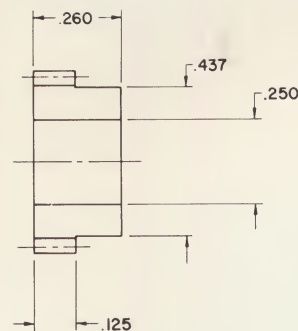


MJ-075-201

SPUR GEAR

75 TEETH
42 DIAMETRAL
PITCH
20° P.A.
1.785 PITCH DIA.
1.833 OUTSIDE DIA.

SPUR GEAR & HUB:
DELRIN - NATURAL



MK-024-201

SPUR GEAR

24 TEETH
48 DIAMETRAL
PITCH
14.5° P.A.
0.500 PITCH DIA.
0.542 OUTSIDE DIA.

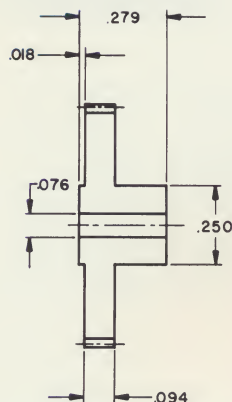
SPUR GEAR:
DELRIN-BLACK

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING

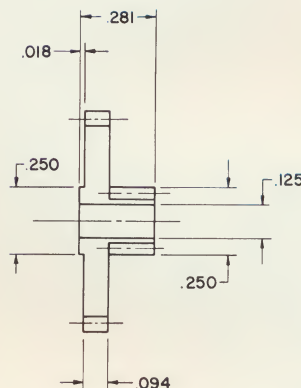
MK-036-201



SPUR GEAR
36 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.750 PITCH DIA.
0.792 OUTSIDE DIA.

SPUR GEAR & HUB:
NYLON 101 - NATURAL

MK-036-301

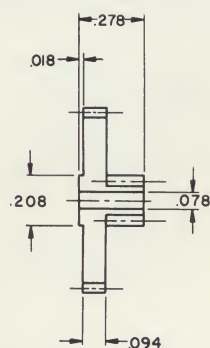


SPUR GEAR
36 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.750 PITCH DIA.
0.792 OUTSIDE DIA.

SPUR PINION
10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.208 PITCH DIA.
0.250 OUTSIDE DIA.

GEAR & PINION CLUSTER: DELRIN - NATURAL

MK-036-302

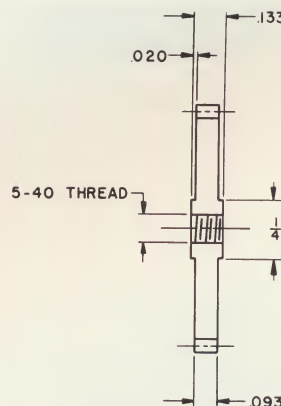


SPUR GEAR
36 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.750 PITCH DIA.
0.785 OUTSIDE DIA.

SPUR PINION
8 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.167 PITCH DIA.
0.208 OUTSIDE DIA.

SPUR GEAR CLUSTER:
NYLON 101 - NATURAL

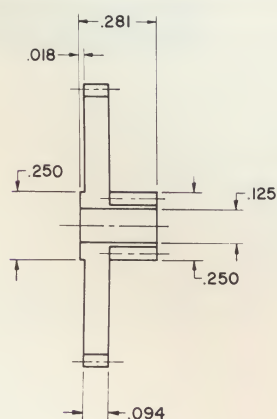
MK-048-101



SPUR GEAR
48 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
1.000 PITCH DIA.
1.041 OUTSIDE DIA.

SPUR GEAR: NYLATRON G.S.

MK-048-301

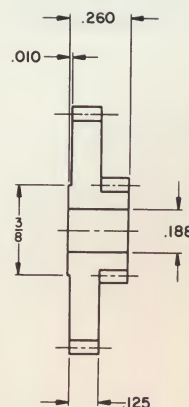


SPUR GEAR
48 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
1.000 PITCH DIA.
1.042 OUTSIDE DIA.

SPUR PINION
10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.208 PITCH DIA.
0.250 OUTSIDE DIA.

GEAR & PINION CLUSTER: DELRIN - NATURAL

MK-048-302



SPUR GEAR
48 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
1.000 PITCH DIA.
1.041 OUTSIDE DIA.

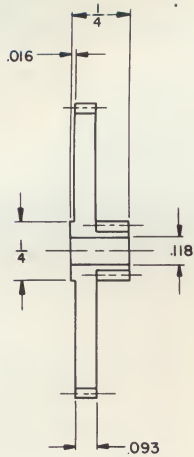
SPUR PINION
9 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.375 PITCH DIA.
0.458 OUTSIDE DIA.

SPUR GEAR CLUSTER:
DELRIN - NATURAL

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING



MK-058-301

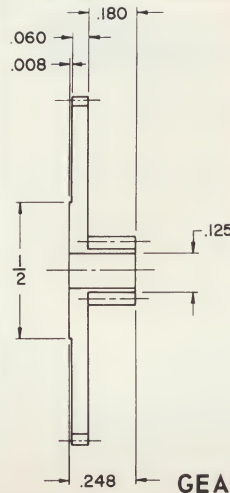
SPUR GEAR

58 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
1.210 PITCH DIA.
1.250 OUTSIDE DIA.

SPUR PINION

10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.208 PITCH DIA.
0.250 OUTSIDE DIA.

**SPUR GEAR CLUSTER:
DELFIN - BLACK**



MK-060-301

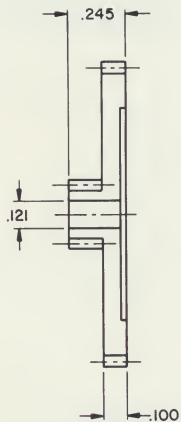
SPUR GEAR

60 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
1.248 PITCH DIA.
1.281 OUTSIDE DIA.

SPUR PINION

10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.208 PITCH DIA.
0.249 OUTSIDE DIA.

GEAR CLUSTER: NYLON 101-NATURAL



MK-060-302

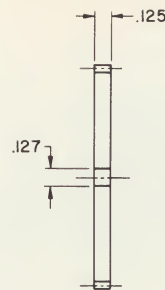
SPUR GEAR

60 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
1.250 PITCH DIA.
1.292 OUTSIDE DIA.

SPUR PINION

12 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.250 PITCH DIA.
0.292 OUTSIDE DIA.

**SPUR GEAR CLUSTER:
NYLATRON G.S.**

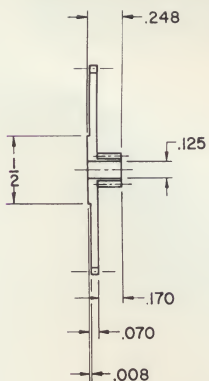


MK-062-101

SPUR GEAR

62 TEETH
48 DIAMETRAL
PITCH
14.5° P.A.
1.292 PITCH DIA.
1.333 OUTSIDE DIA.

**SPUR GEAR-PLAIN:
NYLON 101-NATURAL**



MK-072-301

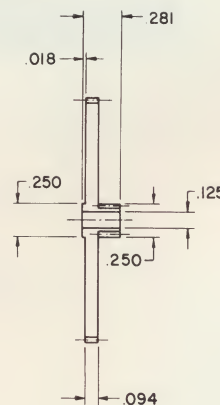
SPUR GEAR

72 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
1.497 PITCH DIA.
1.540 OUTSIDE DIA.

SPUR PINION

10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.207 PITCH DIA.
0.250 OUTSIDE DIA.

MOLDED GEAR CLUSTER: NYLON 101-NATURAL



MK-084-301

SPUR GEAR

84 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
1.750 PITCH DIA.
1.792 OUTSIDE DIA.

SPUR PINION

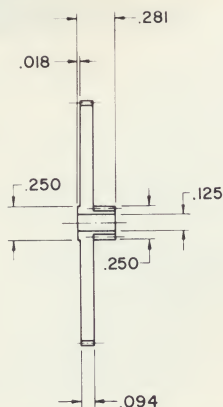
10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.208 PITCH DIA.
0.250 OUTSIDE DIA.

GEAR & PINION CLUSTER: DELFIN-NATURAL

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING



MK-096-301

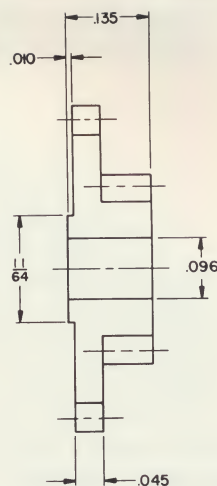
SPUR GEAR

96 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
2.000 PITCH DIA.
2.042 OUTSIDE DIA.

SPUR PINION

10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.208 PITCH DIA.
0.250 OUTSIDE DIA.

GEAR & PINION CLUSTER: DELRIN-NATURAL



ML-023-301

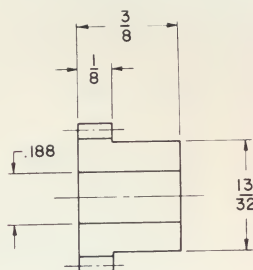
SPUR GEAR

23 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.474 PITCH DIA.
0.515 OUTSIDE DIA.

SPUR PINION

12 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.262 PITCH DIA.
0.304 OUTSIDE DIA.

SPUR GEAR CLUSTER:
DELRIN - NATURAL

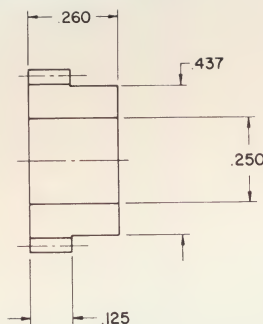


ML-024-201

SPUR GEAR

24 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.500 PITCH DIA.
0.542 OUTSIDE DIA.

SPUR GEAR & HUB:
GLASS FILLED NYLON
WITH MOLYBDENUM DISULPHIDE

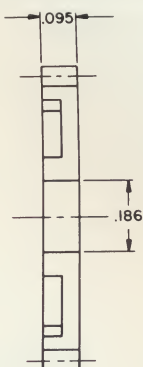


ML-024-202

SPUR GEAR

24 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.500 PITCH DIA.
0.542 OUTSIDE DIA.

SPUR GEAR:
DELRIN-NATURAL

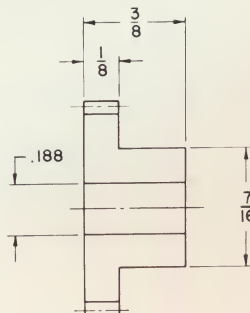


ML-036-101

SPUR GEAR

36 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.729 PITCH DIA.
0.770 OUTSIDE DIA.

SPUR GEAR - PLAIN:
DELRIN - NATURAL



ML-036-201

SPUR GEAR

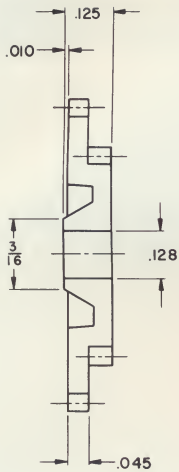
36 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.750 PITCH DIA.
0.792 OUTSIDE DIA.

SPUR GEAR & HUB:
GLASS FILLED NYLON
WITH MOLYBDENUM DISULPHIDE

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING



ML-036-301

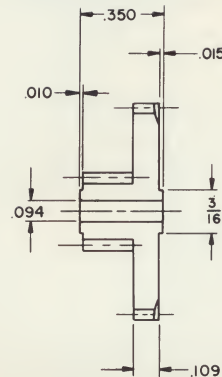
SPUR GEAR

36 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.729 PITCH DIA.
0.770 OUTSIDE DIA.

SPUR PINION

25 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.515 PITCH DIA.
0.557 OUTSIDE DIA.

SPUR GEAR CLUSTER:
DELFIN - NATURAL



ML-042-301

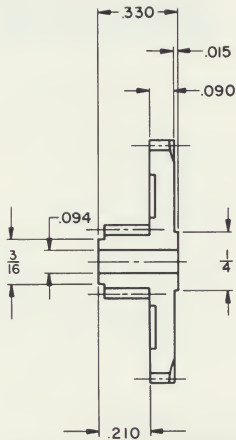
SPUR GEAR

42 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.875 PITCH DIA.
0.917 OUTSIDE DIA.

SPUR PINION

14 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.292 PITCH DIA.
0.333 OUTSIDE DIA.

SPUR GEAR CLUSTER:
NYLON 101 - NATURAL



ML-048-301

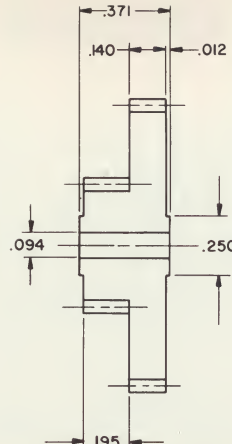
SPUR GEAR

48 TEETH
48 DIAMETRAL PITCH
20° P.A.
1.000 PITCH DIA.
1.042 OUTSIDE DIA.

SPUR PINION

12 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.250 PITCH DIA.
0.292 OUTSIDE DIA.

SPUR GEAR CLUSTER:
NYLON 101 - NATURAL



ML-058-301

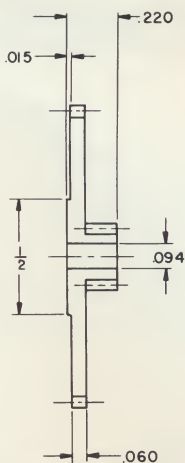
SPUR GEAR

58 TEETH
48 DIAMETRAL PITCH
20° P.A.
1.208 PITCH DIA.
1.250 OUTSIDE DIA.

SPUR PINION

22 TEETH
42 DIAMETRAL PITCH
20° P.A.
0.524 PITCH DIA.
0.571 OUTSIDE DIA.

SPUR GEAR CLUSTER:
DELFIN - NATURAL



ML-060-303

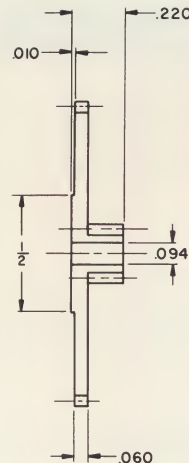
SPUR GEAR

60 TEETH
48 DIAMETRAL PITCH
20° P.A.
1.250 PITCH DIA.
1.292 OUTSIDE DIA.

SPUR PINION

12 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.250 PITCH DIA.
0.292 OUTSIDE DIA.

SPUR GEAR CLUSTER:
NYLATRON G.S.



ML-060-304

SPUR GEAR

60 TEETH
48 DIAMETRAL PITCH
20° P.A.
1.250 PITCH DIA.
1.292 OUTSIDE DIA.

SPUR PINION

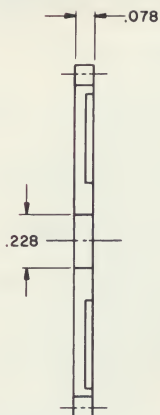
10 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.208 PITCH DIA.
0.250 OUTSIDE DIA.

SPUR GEAR CLUSTER:
NYLATRON G.S.

WINZELER MOLDED GEARS

SPUR GEARS

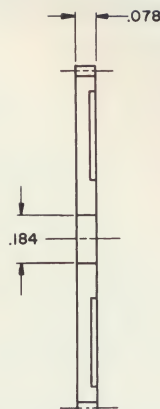
MADE TO ORDER FROM STOCK TOOLING



ML-068-101

SPUR GEAR
68 TEETH
48 DIAMETRAL
PITCH
20° P.A.
1.416 PITCH DIA.
1.470 OUTSIDE DIA.

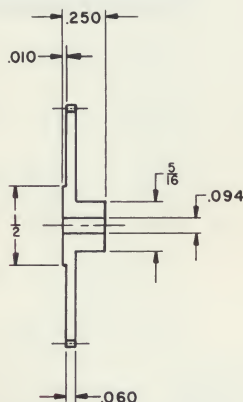
**SPUR GEAR – PLAIN:
NYLON 101 – NATURAL**



ML-068-102

SPUR GEAR
68 TEETH
48 DIAMETRAL
PITCH
20° P.A.
1.416 PITCH DIA.
1.470 OUTSIDE DIA.

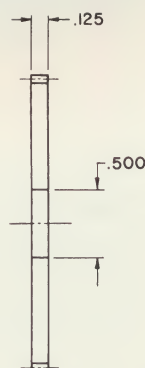
**SPUR GEAR – PLAIN:
NYLON 101 – NATURAL**



ML-072-201

SPUR GEAR
72 TEETH
48 DIAMETRAL
PITCH
20° P.A.
1.500 PITCH DIA.
1.542 OUTSIDE DIA.

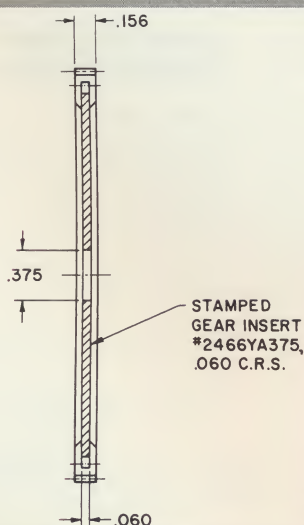
**SPUR GEAR & HUB:
NYLATRON G.S.**



ML-103-101

SPUR GEAR
103 TEETH
48 DIAMETRAL
PITCH
20° P.A.
2.146 PITCH DIA.
2.187 OUTSIDE DIA.

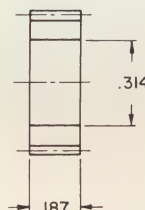
SPUR GEAR: NYLATRON G.S.



ML-144-101

SPUR GEAR
144 TEETH
48 DIAMETRAL
PITCH
20° P.A.
3.000 PITCH DIA.
3.042 OUTSIDE DIA.

**SPUR GEAR:
NYLON 101 – NATURAL**



MO-032-101

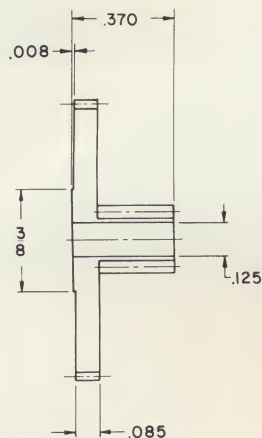
SPUR GEAR
32 TEETH
64 DIAMETRAL
PITCH
14.5° P.A.
0.500 PITCH DIA.
0.531 OUTSIDE DIA.

**SPUR GEAR:
DELTRIN – NATURAL**

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING



MP-064-301

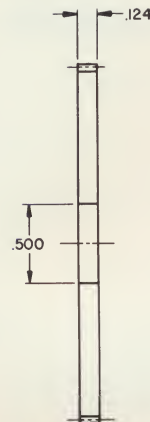
SPUR GEAR

64 TEETH
64 DIAMETRAL PITCH
20° P.A.
1.000 PITCH DIA.
1.031 OUTSIDE DIA.

SPUR PINION

10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.208 PITCH DIA.
0.250 OUTSIDE DIA.

GEAR & PINION CLUSTER: NYLON 101 - NATURAL

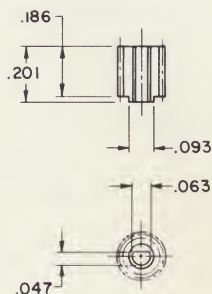


MR-162-101

SPUR GEAR

162 TEETH
72 DIAMETRAL PITCH
20° P.A.
2.250 PITCH DIA.
2.283 OUTSIDE DIA.

SPUR GEAR - PLAIN:
NYLATRON G.S.

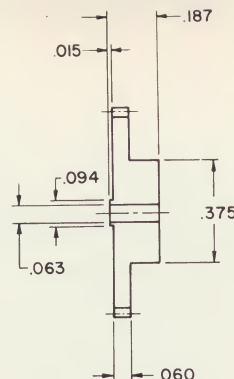


MS-012-101

SPUR GEAR

12 TEETH
80 DIAMETRAL PITCH
14.5° P.A.
0.150 PITCH DIA.
0.175 OUTSIDE DIA.

SPUR GEAR:
DELRIN - NATURAL

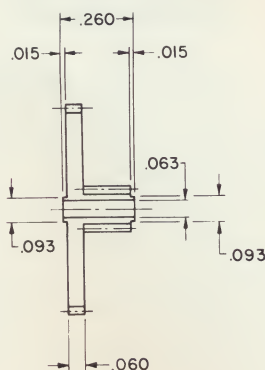


MS-060-202

SPUR GEAR

60 TEETH
80 DIAMETRAL PITCH
14.5° P.A.
0.750 PITCH DIA.
0.775 OUTSIDE DIA.

SPUR GEAR & HUB:
DELRIN - NATURAL



MS-060-304

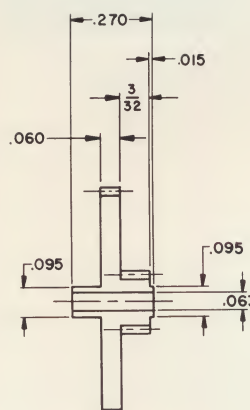
SPUR GEAR

60 TEETH
80 DIAMETRAL PITCH
14.5° P.A.
0.750 PITCH DIA.
0.775 OUTSIDE DIA.

SPUR PINION

12 TEETH
80 DIAMETRAL PITCH
14.5° P.A.
0.150 PITCH DIA.
0.175 OUTSIDE DIA.

GEAR & PINION CLUSTER: NYLATRON G.S.



MS-060-305

SPUR GEAR

60 TEETH
80 DIAMETRAL PITCH
14.5° P.A.
0.750 PITCH DIA.
0.775 OUTSIDE DIA.

SPUR PINION

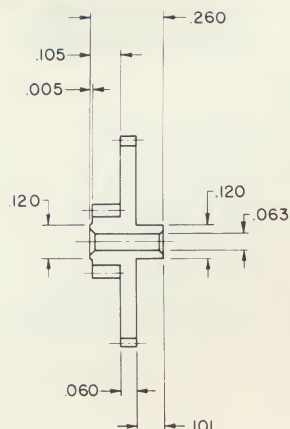
15 TEETH
80 DIAMETRAL PITCH
14.5° P.A.
0.187 PITCH DIA.
0.212 OUTSIDE DIA.

SPUR GEAR CLUSTER:
NYLATRON G.S.

WINZELER MOLDED GEARS

SPUR GEARS

MADE TO ORDER FROM STOCK TOOLING



MS-060-306

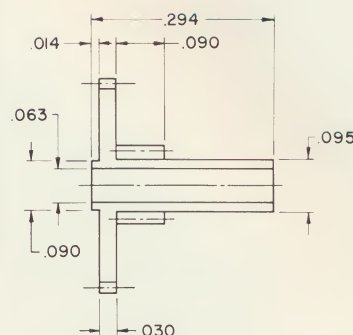
SPUR GEAR

60 TEETH
80 DIAMETRAL PITCH
14.5° P.A.
0.750 PITCH DIA.
0.775 OUTSIDE DIA.

SPUR PINION

11 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.229 PITCH DIA.
0.271 OUTSIDE DIA.

GEAR & PINION CLUSTER: NYLATRON G.S.



MU-036-301

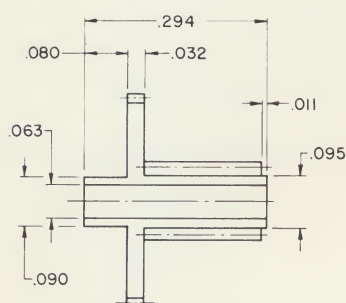
SPUR GEAR

36 TEETH
96 DIAMETRAL PITCH
14.5° P.A.
0.375 PITCH DIA.
0.396 OUTSIDE DIA.

SPUR PINION

12 TEETH
96 DIAMETRAL PITCH
14.5° P.A.
0.125 PITCH DIA.
0.146 OUTSIDE DIA.

GEAR & PINION CLUSTER: DELRIN - BLACK



MU-036-302

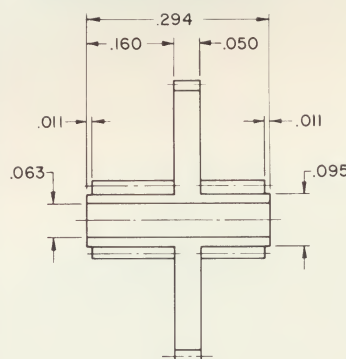
SPUR GEAR

36 TEETH
96 DIAMETRAL PITCH
14.5° P.A.
0.375 PITCH DIA.
0.396 OUTSIDE DIA.

SPUR PINION

12 TEETH
96 DIAMETRAL PITCH
14.5° P.A.
0.125 PITCH DIA.
0.146 OUTSIDE DIA.

GEAR & PINION CLUSTER: DELRIN - BLACK



MU-048-301

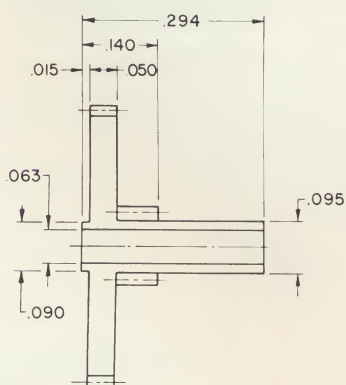
SPUR GEAR

48 TEETH
96 DIAMETRAL PITCH
14.5° P.A.
0.500 PITCH DIA.
0.521 OUTSIDE DIA.

SPUR PINION

12 TEETH
96 DIAMETRAL PITCH
14.5° P.A.
0.125 PITCH DIA.
0.146 OUTSIDE DIA.

GEAR & PINION CLUSTER: DELRIN - BLACK



MU-048-302

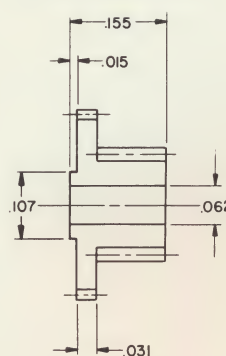
SPUR GEAR

48 TEETH
96 DIAMETRAL PITCH
14.5° P.A.
0.500 PITCH DIA.
0.521 OUTSIDE DIA.

SPUR PINION

12 TEETH
96 DIAMETRAL PITCH
14.5° P.A.
0.125 PITCH DIA.
0.146 OUTSIDE DIA.

GEAR & PINION CLUSTER: DELRIN - BLACK



MZ-034-301

SPUR GEAR

34 TEETH
120 DIAMETRAL PITCH
20° P.A.
0.283 PITCH DIA.
0.300 OUTSIDE DIA.

SPUR PINION

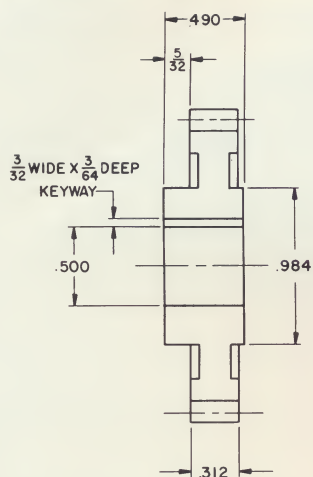
15 TEETH
96 DIAMETRAL PITCH
20° P.A.
0.156 PITCH DIA.
0.180 OUTSIDE DIA.

GEAR & PINION CLUSTER:
DELRIN - NATURAL

WINZELER MOLDED GEARS

HELICAL GEARS

MADE TO ORDER FROM STOCK TOOLING

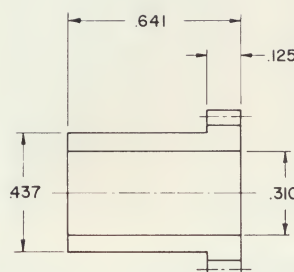


LY-030-501

HELICAL GEAR

30 TEETH
16 NORMAL
DIAMETRAL
PITCH
14.5° NORMAL P.A.
1.867 PITCH DIA.
1.975 OUTSIDE DIA.
11° 18' HELIX ANGLE
(R.H.)

HELICAL GEAR & HUB
NYLATRON G.S.

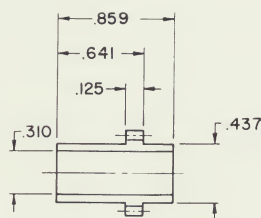


MH-020-501

HELICAL GEAR

20 TEETH
36 NORMAL
DIAMETRAL
PITCH
20° NORMAL P.A.
0.569 PITCH DIA.
0.617 OUTSIDE DIA.
12° 32' HELIX ANGLE
(R.H.)

HELICAL GEAR & HUB:
NYLATRON G.S.

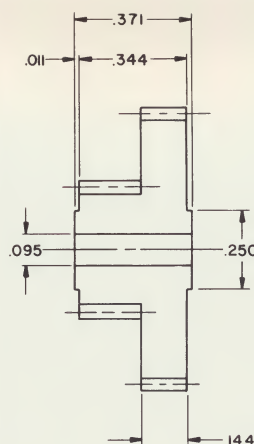


MH-020-502

HELICAL GEAR

20 TEETH
36 NORMAL
DIAMETRAL
PITCH
20° NORMAL P.A.
0.569 PITCH DIA.
0.617 OUTSIDE DIA.
12° 32' HELIX ANGLE
(L.H.)

HELICAL GEAR & HUB:
NYLATRON G.S.



ML-041-601

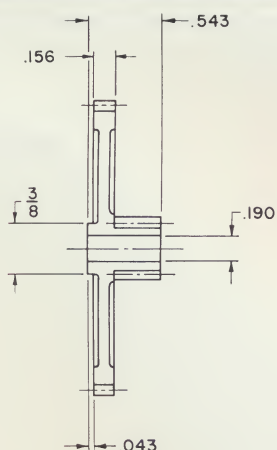
HELICAL GEAR

41 TEETH
48 NORMAL DIAMETRAL
PITCH
20° NORMAL P.A.
0.862 PITCH DIA.
0.903 OUTSIDE DIA.
7° 33' HELIX ANGLE

SPUR PINION

19 TEETH
48 DIAMETRAL PITCH
20° P.A.
0.396 PITCH DIA.
0.437 OUTSIDE DIA.

HELICAL GEAR CLUSTER:
DELFIN - NATURAL



ML-096-601

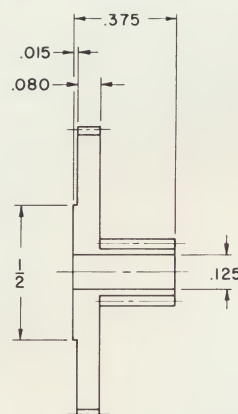
HELICAL GEAR

96 TEETH
48 NORMAL DIAMETRAL
PITCH
20° NORMAL P.A.
2.135 PITCH DIA.
2.177 OUTSIDE DIA.
20° 29' HELIX ANGLE
(R.H.)

SPUR PINION

12 TEETH
32 DIAMETRAL PITCH
20° P.A.
0.375 PITCH DIA.
0.456 OUTSIDE DIA.

HELICAL GEAR & SPUR PINION: NYLATRON G.S.



MP-064-601

HELICAL GEAR

64 TEETH
64 NORMAL DIAMETRAL
PITCH
20° NORMAL P.A.
1.046 PITCH DIA.
1.077 OUTSIDE DIA.

SPUR PINION

10 TEETH
48 DIAMETRAL PITCH
14.5° P.A.
0.208 PITCH DIA.
0.250 OUTSIDE DIA.

HELICAL GEAR CLUSTER: NYLATRON G.S.

WINZELER MOLDED GEARS

RULES AND FORMULAS FOR SPUR GEARS – DIAMETRAL PITCH

Diametral Pitch is the Number of Teeth to Each Inch of the Pitch Diameter

TO GET	HAVING	RULE	FORMULA
Diametral pitch (P)	The circular pitch	Divide 3.1416 by the circular pitch	$P = \frac{3.1416}{P}$
Diametral pitch (P)	The pitch diameter and the number of teeth....	Divide number of teeth by pitch diameter.....	$P = \frac{N}{D}$
Pitch diameter (D)	The number of teeth and the diametral pitch	Divide number of teeth by the diametral pitch	$D = \frac{N}{P}$
Pitch diameter (D)	The number of teeth and the outside diameter	Divide the product of outside diameter and number of teeth by number of teeth plus 2	$D = \frac{D_o N}{N + 2}$
Outside diameter (D _o)	The number of teeth and the diametral pitch	Divide number of teeth plus 2 by the diametral pitch	$D_o = \frac{N + 2}{P}$
Number of teeth (N)	The pitch diameter and the diametral pitch....	Multiply pitch diameter by the diametral pitch	$N = DP$
Thickness of tooth (t _t)	The diametral pitch	Divide 1.5708 by the diametral pitch	$t_t = \frac{1.5708}{P}$
Addendum (a)	The diametral pitch	Divide 1 by the diametral pitch	$a = \frac{1}{P}$
Whole depth (h _t)	The diametral pitch	Divide 2.200 by the diametral pitch, and add .002".....	$h_t = \frac{2.200}{P} + 0.002$

TABLE OF TOOTH PARTS

DIAMETRAL PITCH	CIRCULAR PITCH	ARC TOOTH THICKNESS	ADDENDUM	WORKING DEPTH	WHOLE DEPTH
6	.5236"	.2618"	.1667"	.1333"	.3750"
8	.3927"	.1964"	.1250"	.2500"	.2813"
10	.3142"	.1571"	.1000"	.2000"	.2250"
12	.2618"	.1309"	.0833"	.1666"	.1875"
14	.2244"	.1122"	.0714"	.1429"	.1607"
16	.1964"	.0982"	.0625"	.1250"	.1406"
18	.1745"	.0873"	.0556"	.1111"	.1250"
20	.1571"	.0785"	.0500"	.1000"	.1120"
22	.1428"	.0714"	.0455"	.0909"	.1020"
24	.1309"	.0655"	.0417"	.0833"	.0937"
26	.1208"	.0604"	.0385"	.0769"	.0866"
28	.1122"	.0561"	.0357"	.0714"	.0806"
30	.1047"	.0524"	.0333"	.0667"	.0753"
32	.0982"	.0491"	.0313"	.0625"	.0708"
36	.0873"	.0436"	.0278"	.0556"	.0631"
40	.0785"	.0393"	.0250"	.0500"	.0570"
44	.0714"	.0357"	.0227"	.0455"	.0520"
48	.0655"	.0327"	.0208"	.0417"	.0478"
56	.0561"	.0281"	.0179"	.0357"	.0413"
64	.0491"	.0245"	.0156"	.0313"	.0364"
72	.0436"	.0218"	.0139"	.0278"	.0326"
80	.0393"	.0196"	.0125"	.0250"	.0295"
96	.0327"	.0164"	.0104"	.0208"	.0249"
120	.0262"	.0131"	.0083"	.0167"	.0203"

*For pitches coarser than 20P, use $\frac{2.25}{P}$ for calculating h_t.